population-based cohort to inform health care planners on trends in costs and resource needs related to fractures. **METHODS:** We used the Population Health Research Data Repository for the Province of Manitoba, Canada which is a comprehensive collection of databases including physician visits, hospitalizations and pharmaceutical prescriptions. Age and sex-adjusted fracture rates were calculated for men and women age fifty years and older from 1986 to 2006 according to fracture site (defined by ICD-9-CM codes) and mechanism (presence/absence of ICD-9-CM external injury codes). Generalized linear models with generalized estimating equations were used to derive adjusted annual rates and test the linear change overall, and for men and women separately. **RESULTS:** Osteoporotic fractures (non-traumatic fractures of the hip, forearm, spine and humerus) showed a significant linear decline (0.8% per-annum [95% CI 0.3–1.2%]), with a greater decline in women (1.0% [0.4–1.7%]) than in men (0.5% [0.0–1.3%], $P < .05$ for sex interaction). Similar trends were seen for all fractures sites: hip 0.9% (0.2–1.7%), forearm 0.8% (0.4–1.3%), humerus (0.7% [0.2–1.2%]) and spine (0.5% [0.0–1.0%]) A greater reduction in traumatic fractures was observed (1.8% per-annum [95% CI 1.0–2.6%]), with a greater decline in men (2.2% [1.3–3.1%]) than in women (1.3% [0.2–2.4%], $P < .05$ for sex interaction). Similar results were seen when testing the difference between the initial 5 years (1986–1991) and the final five years (2001–2006) of data. **CONCLUSIONS:** We observed a decrease in both non-traumatic (osteoporotic) and traumatic fracture rates over the study period. This decline was apparent in years prior to widespread osteoporosis testing or availability of modern pharmacotherapy.

PMS10

RECURRENT FRACTURES AFTER FIRST HIP FRACTURES POSHIP(PREVENTION OF SECOND HIP FRACTURES) STUDY

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OBJECTIVES: It has been reported that bone fracture the risk of developing increases for patients who had fractures once before, and and that such patients do not receive enough osteoporosis treatment. In this present study, we investigated incidence of recurrent fractures and the circumstances of pharmacotherapy for osteoporosis among patients who had experience first hip fracture. **METHODS:** Female patients 65 years and older who had experienced first hip fractures from January 1, 2006 to December 31, 2007 were enrolled at 25 hospitals.We reviewed their medical records and conducted a patient survey to collect information on surgical methods, osteoporosis treatments and prognosis for 1 year after first hip fracture.The questionnaires were filled out by either the patient or family member. This interim analysis was conducted for 477 patients of 7 hospitals out of 2,266 enrolled patients. **RESULTS:** The average age was 84.0 (66–103) years old. In terms of fracture type, we identified 237 cervical cases and 237 intertrochantric fractures, with 3 cases that were not specified. A total of 94.3 % of the patients received an operation. During hospitalization, 26.2% were on pharmacotherapy and 22.9% received no pharmacotherapy. For the observational period, 1 year after first fractures, 13.4% of the patients received pharmacotherapy, but 57.2% received no treatment. For the observational period, 44 patients (9.2%) experienced recurrent fractures and 18 (3.8%) out of those suffered hip fractures. **CONCLUSIONS:** In this study, the incidence of recurrent hip fractures among patients who have already experienced a first hip fracture was 3,800/100,000 person-year. This is 7.4 times the rate found in the general population of the same age group. Despite this increase in incidence rate, only 13% of patients had received osteoporosis treatment after the first hip fracture. Japanese patients who have already suffered from a first hip fracture must be considered high risk patients who should be treated with preventive action.

PMS11

LONG-TERM MORTALITY RATES AFTER INCIDENT FRACTURES IN A POPULATION-BASED COHORT OF MEN AND WOMEN

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OBJECTIVES: Osteoporosis is characterized by low bone mass and increased fracture risk. Increased mortality rates have been documented following fractures, particularly hip and vertebral. Our aim was to compare short-term and long-term mortality rates following an incident fracture in men and women at different sites (hip, wrist, spine, humerus and others). **METHODS:** We identified a population-based cohort of men and women with non-traumatic incident fractures between 1986 and 2006 within the hospital, physician and pharmacy administrative database repository of the Province of Manitoba, Canada. The cohort-entry date was the date of a first fracture (index fracture) after age 50 years. Two matched controls from the same databases were identified for each case. Crude and adjusted mortality rates for each fracture site were computed separately for men and women. Secular trends in fracture site-specific mortality rates over the study period were tested using generalized linear models. **RESULTS:** We identified 23,514 index fractures in men and 52,897 in women. The crude mortality rates were consistently higher in men compared to women. Highest first year mortality rates were noted after hip (women 20.1% vs. men 33.6%) followed by spine fractures (13.9% vs. 15.8%), with lower mortality rates after humerus (7.4% vs. 15.3%), wrist (3.4% vs. 5.3%) and other fractures (9.2% vs. 11.0%). Similar rankings by fracture site were seen for year five mortality: hip fractures (women 53.1% vs. men 66.7%) followed by spine (38.4% vs. 43.1%), humerus (26.6% vs. 41.2%), wrist (15.7% vs. 21.2%) and other fractures (26.5% vs. 29.3%). Post-fracture mortality rates were generally stable over the study period. **CONCLUSIONS:** Fractures at all sites are associated with significant mortality rates, particularly in men. Better understanding of factors associated with increased post-fracture mortality will inform the development of practice guidelines and improved clinical outcomes.

MUSCULAR-SKELETAL DISORDERS – Cost Studies

PMS12

PROBABILISTIC ANALYSIS OF BUDGETARY IMPACT: GLUCOSAMINE IN KNEE OSTEOARTHRITIS TREATMENT

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OBJECTIVES: To determine the financial impact of inclusion of glucosamine in the hospital formulary of Petchabun Hospital. **METHODS:** Conventional NSAIDs, celecoxib, glucosamine were included in the analysis. Hospital perspective was used and we considered only patients who failed to control pain by acetaminophen. Treatment cost of GI and CV event was calculated based on decision tree model in which cooperated with probability from the literature and local DRG cost data. Average cost of drug use per patient per year was calculated from the medical history and computerized dispensing data. Delphi technique with all treating orthopaedics was used to obtain the estimates of number of patient eligible for glucosamine use and effect on volume of other drugs' use in the following years. Probabilistic analysis was used to capture the certainties around estimations. We analyzed this data in a 5-year timeframe (2005–2009) as we assumed the steady penetration of glucosamine was reached. **RESULTS:** In 2005, we estimated there was an increase in drug budget for knee osteoarthritis treatment around 0.8 million baht (23,000 US$) which was growing from 2004 at 7%; it was similar to the growth rate in the ealier year. This was mainly due to the expected reduction in NSAIDs and coxib uses. The forecast budget impact in 2006–2009 were about 0.8, 0.6, 0.5, and 0.2 million baht at the growth rate 6.2%, 4.4%, 3.5% , and 1.5%respectively. Cost of glucosamine was found to be the most sensitive variable, followed by cost of celecoxib and number of patients using glucosamine. **CONCLUSIONS:** Hospital administrators found that glucosamine use resulted in an affordable financial burden to the drug budget for knee osteoarthritis in the hospital. However, to ensure the effective use of glucosamine, they developed the guideline for glucosamine use and also monitor the clinical and economic outcomes. Updated analyses were also recommended to obtain the reliable information for budget planning in the following years.

PMS13

BUDGETARY IMPACT OF A NEW URATE-LOWERING THERAPY (ULT) FOR THE TREATMENT OF GOUT IN A US HEALTH PLAN FORMULARY

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OBJECTIVES: Gout is a chronic condition caused by hyperuricemia, a metabolism and excretion disorder characterized by intense pain "flares" in affected joints. The objective was to estimate budgetary impact of adding febuxostat to a US health plan formulary for gout treatment. **METHODS:** An interactive model was developed using decision analysis methods comparing expected annual number of gout flares and associated costs among members treated with febuxostat 40 mg/80 mg vs allopurinol 300 mg for 1 year. Underlying model data and default inputs were obtained from clinical trials, retrospective studies, and published literature. Gout prevalence was 1%, among which 34% were estimated to be treated. Average febuxostat 1-year market share was assumed to be 3.9%. Model outputs included total per-member per-month (PMPM) cost; gout-, tophi-, and flare-related medical costs and total pharmacy costs, and number needed to treat (NNT). Costs were adjusted to 2008 $US. User-modified sensitivity analysis on gout prevalence, ULT market share, and pharmacy cost was conducted. **RESULTS:** In a hypothetical 1-million-member health plan, adding febuxostat 40 mg/80 mg to the formulary is expected to increase total annual cost by $0.008 PMPM, reduce gout-related costs by $26,010, and increase pharmacy costs by $124,494. Model data projected a reduction of 22 flares when adding febuxostat to the formulary and NNT of 6.25 patients on febuxostat to prevent 1 gout flare. Sensitivity analyses indicate a positive relationship between febuxostat market share and gout flares avoided and gout-related medical costs. **CONCLUSIONS:** This robust model evaluates the 1-year pharmacy and medical cost offsets on total payer budget. Adding a new ULT to a US health plan formulary minimally impacts total payer budget as shown by the marginal PMPM cost increase and significant gout-related medical savings.

PMS14

MODELING THE PROGRESSION OF RHEUMATOID ARTHRITIS IN ITALY: BUDGET IMPACT ANALYSIS FOR BIOLOGIC AGENTS

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OBJECTIVES: Two simulation models were developed to analyze the cost and outcomes of the biological agents currently marketed in Italy vs disease-modifying antirheumatic drugs (DMARDs) that affect the progression of rheumatoid arthritis (RA). **METHODS: A Markov model over 10 years was constructed with four disease states** according to functional status (HAQ). Disease progression (transition probabilities between the states) was taken from clinical trial data and published literature. Patient